

# Analysis of Preconception Healthcare Services Delivered in Selected Medical Officer of Health Areas of Kandy District in Sri Lanka

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**Abstract** - Rate of reduction of maternal and neonatal mortality in Sri Lanka had slowed down recently, highlighting the need of effective preconceptional interventions to achieve the set healthcare goals. Though many health benefits are offered by the preconception healthcare services, adequate information is not available to evaluate the quality of preconceptional services being offered, especially at community level. This study is aimed to evaluate the status of preconception care delivered to primiparous women of Yatinuwara, Warallagama and Udunuwara Medical Officer of Health Areas in the Kandy district, before their first live pregnancy. A descriptive cross-sectional study was conducted at selected community antenatal clinics and primiparous women below 32 weeks of gestation living in above mentioned areas for more than six months were included. Based on the size of the study population, 218 participants were selected and data on pre pregnancy healthcare services were collected using a consensually validated, pre tested and interviewer administered structured questionnaire. Responses gathered from 217 participants revealed that, 0.95 (95% CI, 0.92-0.98) was above adolescent age and 0.12(95%CI, 0.08-0.16) had preconceptional medical consultations. Almost 0.3 (95% CI, 0.23-0.36) of pregnant women underwent preconceptional measurement of Body Mass Index and 0.52 (95% CI, 0.45-0.58) had folic acid supplementation for at least three months while 0.96 (95% CI, 0.939-0.99) had Rubella vaccination and 0.23 (95% CI, 0.17-0.29) had participated in at least one health education session. Moreover, 0.91 (95% CI, 0.87-0.95) had planned pregnancies while 0.16 (95% CI, 0.11-0.21) had preconceptional screening for chronic diseases. Private sector involvement had been high with 74.2% pre pregnancy consultations. Only 0.037 (95% CI 0.012 to 0.062) had received overall pre-pregnancy care, as per the study protocol. Special attention should be given to improve preconceptional medical consultations, health education services, screening for chronic diseases and effective use of the services offered by National Preconception Health care package of Sri Lanka.

**Index Terms** – preconception care, pre-pregnancy care, pre-pregnancy preparedness, preconceptional interventions

## I. INTRODUCTION

Maternal and child health is a key component of the preventive and curative health care delivery system and interventions identified for improvement, are targeted as life cycle approaches<sup>(1)</sup>. With the declaration of Alma ata in 1978 all governments were directed to form policies to protect and promote health of all <sup>(2)</sup> and in Sri Lanka, the infant mortality rate has witnessed gradual improvement from 19.3 per 1000 live births in 1990 to 10.7 per 1000 live births in 2010 which, is also reflected in the monitoring of achievement of Millennium Development Goals<sup>(3)</sup>. Nevertheless, the rate of reduction has slowed down in recent years while the maternal mortality ratios have been on a declining trend from 61 deaths in 1995 to 44 deaths reported in 2005<sup>(4)</sup>. It is evident that, existing strategies need to be revisited and additional efforts are needed for Sri Lanka's healthcare sector to accomplish Sustainable Development Goals in future while, focusing on the key facts stated in the South East Asia region report of World Health Organization (WHO) published in August 2013, highlighting the importance of preventing identified causes for maternal morbidity and mortality, prior to conception <sup>(5)</sup>.

Cardiac diseases have been identified as the major cause <sup>(6)</sup> of maternal mortality in Sri Lanka while congenital abnormalities, complications of preterm birth, neonatal sepsis and cardiac anomalies are causes of infant deaths <sup>(7)</sup>.

Evidence <sup>(5)</sup> shows that, medical conditions could get aggravated due to physiological changes happening during pregnancy and the outcomes may not be managed properly during antenatal, perinatal and postnatal periods thus, emphasising the importance of effecting interventions to women and couples prior to conception, which could be in the form of biomedical, behavioural and social health improving the overall health status <sup>(8)</sup>. Preventing the consumption of alcohol, vaccinating against Rubella, improving family planning to avoid unwanted pregnancies and unsafe, illegal abortions, providing free access to healthcare for low income women and addressing health concerns prior to pregnancy have already been identified as some of the effective interventions to be adopted, prior to conception <sup>(9)</sup>.

Even before the WHO identified its importance, Sri Lanka has given priority in including the concept of pre pregnancy in the vision of the Maternal and New-born Health programme and strives to “Ensure optimum survival and quality of life for both mother and new born through provision of evidence based, best available care and services during pre-pregnancy, pregnancy and postpartum periods” <sup>(2)</sup>. However, certain studies done in Sri Lanka have shown <sup>(10)</sup> lack of preconceptional preparedness among women and the Ministry of Health has specifically included the provision of comprehensive pre pregnancy care <sup>(11)</sup> as a key objective of the Maternal and New born Health programme developed for 2012-2016 period, along with certain other important objectives <sup>(12)</sup>. As a key objective of this programme, it is expected to increase the coverage of pre pregnant women who receive pre pregnancy care services while other objectives include (1) reducing age specific fertility rates (2) reduction in abortion specific mortality rates (3) attentive involvement in looking into needs of family planning (4) augmenting rubella immunisation coverage (5) increasing the percentage of pregnant women receiving pre conceptional folic acid supplementation and (6) increasing the total contraceptive prevalence rate. The Medical Officer of Health (MOH) and the assigned healthcare team is required to coordinate activities related to the delivery of services under the healthcare package which includes risk screening, physical assessment, vaccinations, health education, counselling and provision of other services <sup>(12)</sup>. Further, various tools such as invitation card (directing card to meet the Public Health Midwife, PHM, given by the marriage registrar), screening tool (preconception care screening check list), guide book for health workers, book for new couples and preconception healthcare clinics and monthly education sessions are used, to attract and educate newly married couples on the importance of preconception care.

Though many health benefits have already been offered by the government under the preconception healthcare services, only few studies have been done to assess the effectiveness of the programmes in terms of community awareness levels, accessibility and deliverability of such services, quality and scale of preconception services etc. Therefore, this research aims to contribute towards identifying the extent of the provision of pre pregnancy care services and also the gaps of such services at grass root level, upon selecting three Medical Officer of Health (MOH) areas in the Kandy district of Sri Lanka.

## II. OBJECTIVE

To describe the pre conception care services delivered to women of Yatinuwara, Warallagama and Udunuwara Medical Officer of Health (MOH) areas of the Kandy district, before their first live pregnancy and the services offered under the National Pre Conception Healthcare package of Sri Lanka.

## III. METHODOLOGY

This was a descriptive cross-sectional study conducted at the Community Antenatal clinics of Yatinuwara, Warallagama and Udunuwara Medical Officer of Health (MOH) areas of the Kandy district. The data was collected over a period of two months at the selected antenatal clinics commencing from 10<sup>th</sup> of August 2015. Ethical clearance was obtained from the Ethics Review Committee of the Post Graduate Institute of Medicine of the University of Colombo and the Administrative clearance was obtained from the Provincial Director of Health Services of Central Province. Study population included the primiparous women attending the Community Antenatal clinics below 32 weeks of gestation and living in the above mentioned MOH areas while, pregnant women who had been residing in the said areas for a period of less than six months before their last regular menstrual period were excluded. Calculated sample size was considered as 231 which, was allocated based on the population size of the three (3) MOH areas while, the number of Antenatal clinic centres selected for the study was decided, considering the sample size of each area.

An interviewer administered structured and pretested questionnaire was developed after the literature review, interviews with experts and Focus Group Discussions and made available in all three languages while, data was collected upon visiting each Antenatal clinic. Verified data was analysed using SPSS computer package, with univariate analysis being done initially followed by a bivariate analysis done on selected variables.

#### IV. RESULTS

With one primiparous mother refusing to participate, out of the remaining 217 participants majority of the pregnant women were around 27 years old and most of them (39.2%) had obtained post-secondary/ non-tertiary education up to grade 13, as per the ISCED 2011 classification. Rest of the key socio demographic characteristics are shown in Table 1 below.

**Table 1: Socio demographic details of the participants**

<b>Age</b>					
	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Mode</b>	<b>Median</b>
<b>Age of the Participant</b>	17	43	27.2	26	27
<b>Age of the spouse</b>	18	49	30.3	30	30
<b>Distribution of ethnicity</b>					
<b>Ethnicity</b>	<b>Sinhala</b>	<b>Sri Lankan Tamil</b>	<b>Sri Lankan Moors</b>	<b>Indian Tamils</b>	<b>Burger</b>
	183(84.3)	3(1.4)	31(14.3)	-	-
<b>Distribution of religion</b>					
<b>Religion</b>	<b>Buddhist</b>	<b>Hindu</b>	<b>Islamic</b>	<b>Christian</b>	<b>-</b>
	180 (82.9)	3(1.4)	31(14.3)	3(1.4)	-
<b>Level of Education of study participant categorized according to the International Standard Classification of Education 2011(ISCED 2011)</b>					
<b>Education Category*</b>			<b>Frequencies</b>	<b>Percentage (%)</b>	
<b>Primary (grades 1-5)</b>			4	1.8	
<b>Lower Secondary (grades 6-8)</b>			4	1.8	
<b>Upper Secondary (grades 9-11)</b>			60	27.6	
<b>Post-Secondary/Non tertiary (grades12-13)</b>			85	39.2	
<b>Short cycle tertiary</b>			16	7.4	
<b>Bachelors level</b>			46	21.2	
<b>Masters level</b>			2	0.9	
<b>Doctorate level</b>			-	-	

## Preconception care

With the participants of the study being categorised based on identified components of preconception healthcare services as indicated in Table 2, only eight (8) pregnant women, proportion of 0.037 (95% CI 0.012 to 0.062), had received overall care, as per the study protocol.

**Table 2: Preconception care components and number of receivers**

Component of Preconceptional health care	Frequency/ percentage
1 Pregnant women aged more than 19 (above adolescent age)	206 (94.9%)
2 Measurement of BMI and got an explanation about the value of BMI	26 (12%)
3 Pre-pregnancy consultation by a Medical officer	66 (30.4%)
4 Preconceptional folic acid supplementation for minimum of three months	113 (52.3%)
5 Rubella immunization before pregnancy	208 (95.8%)
6 Participated to at least one pre pregnancy health education session	51 (23.5%)
7 genetic counseling before pregnancy (i.e. if there were marriages among close relatives)	-
8 When pregnancy was an expected pregnancy	198 (91.2%)
9 Pre pregnancy screening and diagnosis of chronic diseases	3 (1.4%)

*Since one participant has received more than one component of care the total is not shown*

## Sources and modes of delivery of pre-pregnancy healthcare

Sources of pre pregnancy care is referred to the institutes and sectors which provide such care and modes of care refers to the categories of healthcare personnel and the manner of delivery of such services as stated in Table 3.

**Table 3: Sources and modes of delivery of some components of pre pregnancy care**

Pre pregnancy care	Health sector		Institute and health care personnel					Total participants who received care
	Govt. sector	Private sector	MOH preconception care clinic	Medical Officer at Govt. hospital	MO private sector	Specialists private sector	other	Total
<b>1</b> Pre pregnancy of measurement of BMI	21(9.7)	10(4.6)	18(8.3)	3(1.4)	3(1.4)	3(1.4)	4(1.8)	31(14.3)
<b>2</b> Pre pregnancy medical consultation	17(7.8)	49(22.5)	13(6.0)	4(1.8)	15(6.9)	33(15.2)	-	66(30.4)
<b>3</b> Screening of couples having a family history of chronic diseases	9(4.1)	26(11.9)	2(0.9)	7(3.2)	15(6.9)	5(2.3)	6(2.8)	35(16.1)

Remarkably, overall majority (22.5%) of the respondents have obtained pre-pregnancy medical consultations from the private sector institutes.

### Health education

Though two sessions of health education are usually conducted by the staff of MOH, only one (1) study participant had attended both sessions. Healthcare sector staff in the respective areas consisting of MOHs (28.4%), Public Health Nursing Sisters (PHNSs: 24.5%) and Public Health Midwives (PHMs: 47.1%) have conducted education sessions as shown in Table 5 below in order, to create awareness and educate the respondents on pre pregnancy care.

**Table 4: Pre pregnancy health education**

Source	Participation	Percentage (%)
Conducted by MOH staff	16	7.4
Conducted by other institutes	35	16.2
Conducted by both MOH staff and other institutes	51	23.6

**Table 5: Education sessions conducted by health officials**

Healthcare educationists/ officials	Frequency	Percentage (%)
MOH	29	28.4
PHNS	25	24.5
PHM	48	47.1
<b>Total</b>	<b>102</b>	<b>100.0</b>

Though seven (3.2%) women had mentioned that, they were married to a close relative none of them have been referred to or given any genetic counselling prior to pregnancy. Out of 119 (54.8%) participants who had a family history of chronic diseases only 35 (16.1%) respondents were screened and only two (0.9%) of them had been screened by MOH while others (i.e. 15 women; 6.9%) had been screened by medical officers of private sector.

#### **Folic acid supplementation**

Though 163 (75.1%) participants were aware of the effects of folic acid on foetal congenital malformations, only 154 (71%) respondents had consumed the supplement as a preconception care mechanism. Majority (i.e. 44 women; 20.3%) of them had been made aware mostly by their own family members and 10.6% had gained knowledge from friends while, the midwives in the areas had educated about 12.4% of pregnant women.

#### **Care provided according to the National Preconception Care package**

Details of the study participants who received pre-pregnancy care according to identified components of the national preconception healthcare package are shown in Table 6.

**Table 6: Details of the preconception healthcare package and analysis of recipients**

Components of National preconception health care package		frequency	Percentage (%)
1	Receiving the Invitation card from the marriage registrar	01	0.05
2	Study participant meeting the PHM	56	25.8
3	PHM's visit to meet the study participant when she failed to meet PHM	29	13.4
4	Total study participants who had Pre-pregnancy meetings with PHM	85	39.2
5	Delivery of Preconception care check list	31	14.3
6	Completion of preconception care check list and handing over it to PHM	26	12.0
7	Delivery of information on preconception health care clinic and health education sessions to study participant	36	16.6
8	Participation to Health education sessions conducted by MOH staff	16	7.4
9	Participation of spouse to health education sessions	13	6.0
10	Usage of family planning methods before first pregnancy	50	23
11	Unmet need of family planning	13	6.7
12	Study participants who consulted a dental surgeon before pregnancy	48	22.1
13	Study participants whose initial diagnosis of chronic diseases were made before pregnancy and after marriage	3	1.4

*Since one participant had received more than one component of care the total is not shown above*

As per the study protocol, only 14 participants received overall care under the National Preconception Care package and the proportion was 0.06 (95% CI-0.029 to 0.091).

### Family planning

The methods introduced had been adopted by 50 (23.0%) study participants and 30 (13.8%) had used oral contraceptive pills while, 10 (4.6%) couples have used condoms and an equivalent number had used natural methods. Moreover, 26 participants who had agreed on family planning methods (i.e. 52% out of total family planning users) had a pre-pregnancy meeting with PHMs and out of the 167 non-adopters, 59 participants (i.e.35.3% out of total non-adopters) have had a pre-pregnancy meeting with PHM.

Significant statistical difference was not prominent regarding the age of participants who received pre-pregnancy care according to the National Preconception Care package and non-receivers based on Fishers exact test ( $p=0.762$ ) and independent sample T test ( $p=0.987$ ). Similarly, statistical analysis of the impact of ethnicity ( $p=0.702$ ), education level ( $p=0.362$ ) and income level ( $p=0.585$ ) on the two categories did not indicate any significance, as well as employment ( $p=0.604$ ) based on the Chi square test.

### V. CONCLUSION

This study presented a realistic view of provided preconception care and the pre-pregnancy preparedness, among pregnant women in MOH areas of Yatinuwara, Warallagama and Udunuwara in the Kandy district, remained unsatisfactory. Notably, involvement of the private sector specialist obstetricians was evident and screening of married couples for chronic diseases was handled by them. Provision of Rubella vaccination by public sector was satisfactory. Nevertheless, overall, the preconception care levels in these areas remained at low levels, amidst educational and awareness programmes being conducted by MOH, PHM and other institutes. Similarly, all healthcare services offered under the National Preconception Care package were less effective due to deficiencies identified in the provision of such care and also due to lack of initiatives taken in creating awareness among the newly married couples.

This study provides an insight on specific areas for improvement in providing preconception care and one such key issue is, sorting out administrative issues by the marriage registrar of the area in ensuring that the newly wedded couples do meet the PHM. The tasks performed by the PHMs in providing preconception healthcare needs to be broad based and they should be empowered to carry out their duties efficiently to register eligible married couples for preconception healthcare services. Moreover, the need of an effective monitoring mechanism to monitor the coverage of target population by the preconception health care clinics and through educative sessions, was also identified. A more collective and cohesive approach needs to be adopted by Medical Officers of Health, General Practitioners and Specialist Medical Officers in creating awareness amongst the many youth (i.e. both men women) regarding the importance of obtaining preconception healthcare services. Therefore, this research provides information on what adjustments may be made to current programmes, to improve maternal and new-born healthcare services in the country to achieve better results.

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